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WLDG 150.B01: Welding Layout Techniques

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**THE UNIVERSITY OF MONTANA
MISSOULA COLLEGE
INDUSTRIAL TECHNOLOGY DEPARTMENT**

COURSE SYLLABUS

COURSE NUMBER AND TITLE: WLDG 150 Layout Techniques

DATE REVISED: August 2020

SEMESTER CREDITS: 2

PREREQUISITES: None

Instructor: Brad Platts

E-Mail: bradley.platts@umontana.edu

(According to new Federal and UM policies I **cannot** answer any email that does not come from an official UM email address; no Hotmail, AOL, yahoo, gmail, etc.)

Phone: 243-7647

Office: Welding Lab Office

Office Hours: 8:00 am – 4:00pm or by appointment

RELATIONSHIP TO PROGRAM(S):

This first year class provides basic concepts for drawing and constructing parts for welding.

COURSE DESCRIPTION:

Using geometric construction techniques and related layout tools, shapes and locations (points) are identified to develop cut lines, bend lines, hole locations, etc. Desired layouts are obtained using industrial blueprints and similar theoretical problems. Mathematical computations are used to identify area, volumes, angles of layouts, weight and costs of materials. Practical layout of sheet, plate, structural shapes and pipe is experienced. Geometric construction is emphasized, and the use of contour markers is also introduced.

STUDENT PERFORMANCE OUTCOMES:

Occupational Performance Objectives

Upon completion of this course, the student will be able to:

1. Develop an understanding of techniques used in industry for layout of sheet, plate, and pipe.
2. Use all common layout tools for pipe, sheet, and structural shapes.
3. Calculate material weights, lengths, hole placement, part placement, etc., mathematically from information given on industrial blueprints.
4. Demonstrate the use of these layout techniques, calculations, and use of tools through the completion of numerous practical exams achieving aggregate scores of 70% or better.

STUDENT PERFORMANCE ASSESSMENT METHODS AND GRADING PROCEDURES:

Grading Scale:

A= 100%- 90%
B= 89%- 80%
C= 79%- 70%
D= 69%- 60%
F= 59%- 0%

NOTE: Courses must be passed with a 'C minus (C-)' or greater to count toward degree/certificate requirements.

Grading Breakdown:

Exams	40%
Lab Work and Assignments	35%
Quizzes	10%
Notebook	5%
Professionalism	10%

Written exams: Exams based on class lectures, reading assignments given in class, homework, notes from class video presentations, etc. **No make-up exams will be allowed.**

Lab Experiments: Lab work that will be graded based upon completion of assignment and accuracy of evaluation of the experiment.

Quizzes: Short impromptu tests given on reading assignments, demonstrations, lectures. To receive credit for questions they must be written and answered correctly.

No make-up quizzes will be allowed.

Notebook: This is a compilation of class notes and handouts. It must be complete, well organized and in a three ring binder.

Professionalism: Defined as a combination of one's attitude, motivation, participation (you have to be here in order to participate), organization and work area cleanliness as demonstrated on a daily basis in the lab and classroom.

POLICIES:

- DO NOT OPERATE ANY EQUIPMENT YOU HAVE NOT BEEN TRAINED ON
- NO WRITING OR STICKERS OF ANY KIND ON SCHOOL PROPERTY
- THE ONLY MARKING ON WORKPIECES SHOULD BE FOR IDENTIFICATION OR INSTRUCTIONAL PURPOSES
- NO EARPHONES, HEADPHONES, OR OTHER SOURCE OF MUSIC
- DO NOT PUT GARBAGE IN METAL SHAVING BINS IN MACHINING AREA
- ANY TOOLS USED MUST BE PUT AWAY AT THE END OF EACH CLASS PERIOD

- Late assignments will not be accepted
- Cell phones are to be turned off during class time: no texting or calls are to be done during class time. No cell phones in lab area.
- Any forms of cheating during exams or quizzes are an automatic 0.
- Students are required to access and navigate Moodle by the end of the first week of instruction. This functions as a supplement to the course.
- Attendance is taken, you are required to be in attendance to successfully complete the course.

ACADEMIC INTEGRITY: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at <http://www.umd.edu/SA/VP/SA/index.cfm/page/1321>.

DISABILITY ACCOMMODATION: Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact me after class or in my office. Please be prepared to provide a letter from your DSS Coordinator. For more information, visit the Disability Services website at <http://www.umd.edu/dss/> or call 406.243.2243 (Voice/Text).

SUGGESTED TEXTBOOK:

No text is required but handouts will be taken from Templet Development for the Pipe Trades.

Supplies:

- Compass (6" minimum)
- Tape measure
- Eraser Guide (shield)
- Drafting pencils or leads
- Eraser
- Calculator
- Protractor

COURSE OUTLINE:

1. Drafting and layout equipment
 - a. TAPE MEASURE
 - b. Drafting leads
 - c. Architect's scale
2. Sketching
 - a. Types of sketches
3. Drafting standards and conventions
 - a. Alphabet of Lines
 - b. Standard practices
 - c. Paper sizes
 - d. Dimensioning
 - e. Notes
 - f. Title block
 - g. Introduction to Bill of Materials
4. Orthographic projection
 - a. View orientation
 - b. Projection

5. Pattern development
 - a. Box and pan patterns
 - b. Pipe elbow patterns
 - c. Pipe intersection patterns
 - d. Geometric shape patterns
 - e. Bolt circles
6. Layout tools
 - a. Contour marker
 - b. Trammel points
7. Calculation and estimation
 - a. Volume calculation
 - b. Cost calculation and estimation

NOTE: Faculty reserves the right to modify syllabi and assignments as needed based on faculty, student, and/or environmental circumstances.